

Helicopter Aviation Training Conference and Tradeshow HATS 2001

1.0 Executive Summary

The Helicopter Aviation Training Conference and Tradeshow (HATS) convened on June 4 and 5 at the Hyatt Regency Airport in Orlando for two days of presentation and discussion on the training issues facing the helicopter aviation community. With approximately 100 delegates in attendance discussions on training and safety topics were led by subject matter experts from aviation insurance, legal, training technology, safety and commercial operations organizations. Although many topics were covered the following elements are the recurring themes of the conference:

1. Helicopter operations are much more diverse than any other aviation sector including that of general aviation. Operators range in size from very small companies operating on “subsistence economics” to the larger organizations with more than 100 aircraft in their fleets. In addition there are many types of specialized operations and helicopter aviation is characterized by frequent, multi-leg, short duration flights conducted with little ATC control under mostly VFR conditions.
2. A shortage of adequately trained pilots is the number one problem of the industry. In addition to a sharp decline in the number of military trained pilots exiting the service for the commercial market, the regional, business and major airline fixed-wing communities present a substantial draw on the pool of qualified rotorcraft pilots.
3. Pilot error is by far the largest contributor to rotorcraft accidents.
4. Training requirements for licensing represent a minimal standard above which operators have little present incentive for training. Particularly those whose customer base remains highly cost sensitive. The “subsistence economics” under which many in the industry operate contribute further to the minimalist approach to training.
5. Helicopter missions are widely diverse involving a large variety of locations, flight profiles, ATC situations and specialized operations such as EMS, fire fighting, sling loads, heli-skiing and offshore operations. Yet little to no mission specific training is conducted.
6. Many training technologies exist that may be applied to the situation including a variety of lower cost approaches demonstrated at the conference. Yet regulatory and economic barriers exist that currently inhibit their widespread application

The overall conclusion and recommendation of the conference attendees is that the industry self-organize, along the model of the Radio Technical Commission for Aeronautics (RTCA), to establish higher levels of quality specifications in aircrew and maintenance training. Similar to the way in which the ISO-9000 quality standard serves the engineering and manufacturing sectors with auditable criteria for quality

manufacturing processes, the industry needs to establish and promulgate objective and measurable processes for training that will result in lower risk operations. Mechanisms for auditing and certifying organizations that meet the criteria and for communicating such to the customers purchasing helicopter services need to also be established to create the financial incentive for improving the overall professionalism and training practices of the industry. Halldale Media and Southwest Research Institute (SwRI) have identified the Aviation Training Research and Information Analysis Center (ATRIAC) as an industry funded consortium as the means to accomplish this goal. The next step is for the industries manufacturers, insurers and major operators to commit to funding for ATRIAC and to participation in its activities.

2.0 Program Overview

The following paragraphs provide a brief overview of the conference program and the most significant points made during each session of discussion.

2.1 Reflections of a Pioneer

Mr. Sergei I. Sikorsky

In presenting an overview of his father's life and accomplishments Mr. Sikorsky made the following primary observations.

- 2.1.1 Technology develops, changes and makes possible that which had been previously thought to be impossible. In the course of his lifetime, Igor Sikorsky developed the helicopter as a working, commercially viable device even though science had shown conclusively that rotary wing flight was an impossibility.
- 2.1.2 There are three primary challenges in rotorcraft aviation:
 - Build the machine (the engineering challenge)
 - Stay alive long enough to learn to fly it! (the training challenge)
 - Regulatory and legal issues (have enough regulation to promote safe operations, without so much as to stifle development and innovation)

2.2 Changing the Rotary Wing Training Paradigm

John Stoen, Marsh USA; David Norton, Akin and Gump; Brian Hampson, Galileo Training Center; Mike Coligny, FLYIT Simulators USA

- 2.2.1 Training is a part of *reasonable* preparation for safe aircraft operation. Stoen and Norton point out that the failure to be reasonably prepared will have dire legal (both civil and criminal) and financial implications in the event of an accident.
- 2.2.2 Hampson provides an overview of how the JAA are modifying their regulations to address operational training issues. In particular, the JAA are recognizing that rotary wing operations are significantly different from the point-to-point operations characteristic of fixed wing aircraft,

and are modifying their regulations to require training for specific types of operations.

- 2.2.3 A substantial element of reasonable preparation is conducting training so that the training relates to the actual operational task environments of the aircraft, and so that our training scenarios represent how we actually fly our aircraft.
- 2.2.4 Coligny describes a low-cost device (also demonstrated at the conference) suitable for operational training with relevant “mission specific” scenarios.

2.3 Operational Feedback: Civil and Military Operations and Training Challenges

Jose Maldonado, U.S. Embassy in Colombia; Jim Winkel, Litton EOS; Scott Lunsford, Lunsford Air

- 2.3.1 What is the operational scope of helicopter aviation?
 - NVG/combat training
 - Special operations
 - Law enforcement
 - Sling loads
- 2.3.2 What are the critical rotary wing training issues?
 - Crew chief and integrated crew member training. Presently it is nonexistent except for certain military training devices.
 - Operational scenario training. Even large operators rarely train their pilots using simulation scenarios that are representative of the task environment and geographic location of actual operations.
 - Military source of appropriate trained pilots has declined. Fewer pilots are available and those that are tend to be more specialized.
 - Systems management skills. The aircraft are becoming more sophisticated yet the training does not address how to utilize the technology and also fly the aircraft.
- 2.3.3 Training has to be tailored both to the skill levels of the individual pilots, as well as to the aerial scenarios that realistically reflect their anticipated flight operations.
- 2.3.4 Does it cost money or save money to train? It is recognized that a complete shift in thinking about training costs and benefits needs to take place across the industry. Customers need to be able to discriminate between operators on the basis of training and safety, operators need to be able to invest more in thoroughly prepared pilots and mechanics.
- 2.3.5 The primary training challenges of each of the following flight regimes are:
 - IFR—The expense of attaining and maintaining currency for IFR flight operations.

- VFR—Inadvertent flight into IMC.
- Night Operations –Harmonization
- Special mission training – operationally relevant training scenarios

2.4 Methods, Systems and Technologies to meet the Training Need

Larry Chappell; Mark Julicher, ARINC; Mark Winter, Stimulus; Nir Tel-oren, Mitam Tech/Elbit

- 2.4.1 An entire spectrum of training technologies and methods exist that may be applied to rotary wing training issues.
- 2.4.2 The challenge is matching the most appropriate training activity (according to expected flight operations) with the task so as to accomplish effective, affordable training.
- 2.4.3 There is some concern and frustration with the lean, minimalist approach taken by some operators. Many operate under such tight margins that the ability to spend money beyond that required to meet the basic requirements for licensing is very limited.
- 2.4.4 Problem: Most operators cannot afford to commission multimedia training courses. One solution may be for the FAA (or some other entity serving the industry at large) to purchase and place it in the public domain.

2.5 Human Factors and 30 Years of Helicopter Accidents

John Persinos, Rotor and Wing; Laura Iseler, NASA-AMES

- 2.5.1 The number 1 problem in the industry is the inability to find enough adequately trained pilots. There are much fewer pilots exiting the military, and those that are tend to be much more specialized. Also the higher salaries and better cockpit environments of the business and regional airlines are a significant draw on the rotorcraft pilot base.
- 2.5.2 Careful analysis of over 30 years of helicopter accident data reveals that pilot error is the top factor driving the accident rate.
- 2.5.3 Iseler has five recommendations to improve rotary wing safety.
 - Change the pilot's safety attitude so that at all times and in all circumstances safety is the top priority.
 - Train for comprehension (understanding) and not just for skill proficiency.
 - Train to develop situational awareness, which implies that you must train like you will fly. Interestingly a common cause of accidents is simply running out of fuel.
 - Improve Flight Instructor training, and change the industry practice of using recently graduated students as instructors. Improve instructor pay so that students will learn from the best and most experienced. Most airmanship traits are learned early in the

instructional process thus making it vital that students are learning from experienced and professional aviators.

- Address maintainer training. Poorly trained maintenance personnel contribute significantly to the accident rate by way of mistakes made during aircraft servicing and maintenance.

2.5.4 Iseler maintains a helicopter safety website at <http://safecopter.arc.nasa.gov>

2.6 Emerging Training Technologies, New Ideas and Initiatives

Mark Winter, Simulus; Mark Julicher, ARINC; Nir Tel-oren, Mitam Tech/Elbit; Brian Hampson, Galileo Training Center

- 2.6.1 What are the issues (technical, regulatory, etc) related to the use of low-cost virtual FTDs?
- 2.6.2 How can the regulatory environment keep pace with the rapid development of technology?
- 2.6.3 What kinds of cultural barriers need to be removed to allow the use of such tools as the Advanced Helibrief?

2.7 Training Achievements and Problem Solving

Patrick Corr, Helicopter Adventures; David Peltz, Advanced Flight Training Systems; Jim Winkel, Litton EOS

- 2.7.1 How will we pay for what we know needs to be done from a training perspective? Many operators conduct their business at the level of “subsistence economics” with very little resources for training.
- 2.7.2 There are fewer military pilots are exiting the service, and those pilots have more specialized “target specific” skills.
- 2.7.3 How do we “streamline” our pilot training towards their anticipated mission focus (i.e. EMS).

3.0 The Way Forward

The final discussion period was an open forum for all participants to reflect on what had been seen and heard at the conference and to identify the key issues for ongoing progress. The resulting consensus is that the industry needs to self-organize to establish a working group that will develop a set of training standards that can be used to rate operators across the industry. In much the same way as the RTCA establishes committees and working groups to evaluate technical developments and their impact on aviation and thus to advise the FAA on regulatory policy. In our case the goal is not to raise the floor of regulatory requirements. Rather it is to establish an industry standard for training process and procedures against which operators and individual pilots can be audited and/or certified. The result is anticipated to be:

1. A quantitative measure of service quality and risk against which customers can evaluate proposed costs for contracts.
2. A benchmark that may be used by the industries insurance and financial entities for risk analysis and underwriting.
3. A discriminating mark of professionalism to which operators and individual pilots may aspire.

In addition to establishing these training standards and the procedures by which operators will be assessed, this industry working group may also serve the industry by lobbying for better representation of rotorcraft *training* issues in the NASA and FAA budgets. The group can work to educate the industry, customers, regulators and insurers as to the importance of training, and may serve as a catalyst to involve more civilian operators, law enforcement operators, and others to join in addressing the problem. SwRI and Halldale media have taken the action item to develop a proposal for establishing and leading the industry working group developing the standards which will be developed and published by the Aviation Training Research and Information Analysis Center (ATRIAC). ATRIAC is an open, industry funded consortium established as a strategic alliance between Halldale Media and SwRI to provide research, information analysis and distribution to the aviation community.